

Geological Sciences Department Faculty Annual Report 2009-10

1. Scholarship and Creative Activity

ENTER 2009 CALENDAR ONLY

Publications (Peer Reviewed)

- Bruns, Jessica J., Anderson, Cami Jo, and **Jessey, David R.**, 2009, Basaltic volcanism in the southern Owens Valley, California, in *Landscape Evolution at an Active Plate Margin*, Reynolds, R.E., and Jessey, D.R., eds., California Desert Studies Center Symposium Volume and Field Guide, Zzyzx, CA, pp. 98-106.
- Jessey, David R.**, 2009, The Blue Chert Mine: an epithermal gold occurrence in the Long Valley Caldera, in *Landscape Evolution at an Active Plate Margin*, Reynolds, R.E., and Jessey, D.R., eds., California Desert Studies Center Symposium Volume and Field Guide, Zzyzx, CA, pp. 135-139.
- Jessey, David R.**, Lusk, Mathew W. and Varnell-Lusk, Ashley, 2009, Tectonic implications of basaltic volcanism within the central Owens Valley, California, in *Landscape Evolution at an Active Plate Margin*, Reynolds, R.E., and Jessey, D.R., eds., California Desert Studies Center Symposium Volume and Field Guide, Zzyzx, CA, pp. 140-147.
- Marshall, J.S.**, Gardner, T.W., Protti, M., and Nourse, J.A., 2009, International geosciences field research with undergraduate students: Three models for experiential learning projects investigating active tectonics of the Nicoya Peninsula, Costa Rica, in Whitmeyer, S.J., Mogk, D.W., and Pyle, E.J., eds., *Field Geology Education: Historical Perspectives and Modern Approaches*, Geological Society of America Special Paper 461, doi: 10.1130/2009.2461(08).
- Sak, P.B., Fisher, D.M., Gardner, T.W., **Marshall, J.S.**, and Lafemina, P., 2009, Rough crust subduction, forearc kinematics, and Quaternary uplift rates, Costa Rican segment of the Middle American Trench: Geological Society of America Bulletin, v. 121, no. 7/8, p. 992-1012, doi: 10.1130/B26237.1.
- Gardner, T., Webb, J., Pezzia, C., Amborn, T., Tunnell, R., Flanagan, S., Merritts, D., **Marshall, J.**, Fabel, D., Cupper, M.L., 2009, Episodic intraplate deformation of stable continental margins: evidence from Late Neogene and Quaternary marine terraces, Cape Liptrap, Southeastern Australia: Quaternary Science Reviews, v. 28, no. 1, p. 39-53.
- Nourse, Jonathan A.**, 2009, *Natural Disasters, Past and Impending, in the Eastern San Gabriel Mountains*, in Caputo, M. (ed.), National Association of Geology Teachers Far Western Meeting, Mount San Antonio College, California., April 17-18.

Publications (Non-Peer Reviewed)

- Jessey, David R.** and Reynolds, Robert E., 2009, A field trip to the Owens Valley, in *Landscape Evolution at an Active Plate Margin*, Reynolds, R.E., and Jessey, D.R., eds., California Desert Studies Center Symposium Volume and Field Guide, Zzyzx, CA, pp. 7-59.

Presentations at Professional Conferences

- **Local/Regional**

- Jessey, David R.**, 2009, Tectonic Implication of Basaltic Volcanism within the Eastern California Shear Zone, Southern California Chapter of the Society of Mining Engineers, Pomona, CA, March 22

- Marshall, J.S.**, 2009, Megathrust earthquakes, coastal uplift, and emergent marine terraces of Costa Rica's Nicoya Peninsula: Cal Poly Pomona University, 2nd Annual Provost's Symposium on Faculty Scholarship, Abstracts Volume.
- Marshall, J.S.**, 2009, Integrating research into the undergraduate geosciences curriculum: The San Gabriel Mountain foothills geomorphology field research project: Cal Poly Pomona University, Conversations about Teaching and Learning – 1st Annual Provost's Symposium on Faculty Teaching, Abstracts Volume.
- Marshall, J.S.**, 2009, Enhancing Undergraduate Research at Cal Poly Pomona: The U.R.-BRONCO Project: Cal Poly Pomona University, Fall Conference, September 21, 2009.
- Nourse, Jonathan A.**, 2009: Gold-Silver-Copper-Molybdenum Exploration Meets Structural Geology and Tectonics along the Sonora Mineral Belt, Northwestern Mexico, Society of Mining Engineers, Pomona, CA, April 21
- Nourse, Jonathan A.**, 2009, Failure Analysis of a Fracture-Controlled Rockslide on Sunset Ridge Road, San Gabriel Mountains, California, Abstract in Provost Symposium on Faculty Scholarship, California State Polytechnic University, December 14.
- Polet, J.**, Thio, H.K. and P. Earle, Implementation of Near Real-Time Methods in Seismology to Determine Earthquake Source Characteristics, Provost's Symposium on Faculty Scholarship, 2009.

- **State**

- Jessey, David R.**, and Bruns, Jessica J., April 2009, Tectonic implications of basaltic volcanism within the central Owens Valley, California, **Keynote Address**, 2009 California Desert Studies Desert Studies Symposium

- **National**

- Marshall, J.S.**, Gardner, T.W., Protti, M., and Nourse, J.A., 2009, International geosciences field research with undergraduate students: Three models for experiential learning projects investigating active tectonics of the Nicoya Peninsula, Costa Rica: Geological Society of America, Abstracts with Programs, v. 41, no. 7, p. 601, Abstract 236-14.
- Morrish, S.C., **Marshall, J.S.**, LaFromboise, E.J., Utick, J.D., Piestrzeniewicz, P., and Protti, M., 2009, Coastal uplift and stream piracy as indicators of net seismic cycle deformation along the Costa Rica Pacific margin: Puerto Carrillo Headland and Río Ora Valley, Nicoya Peninsula: Geological Society of America, Abstracts with Programs, v. 41, no. 7, p. 674, Abstract 259-3.
- Nourse, Jonathan A.**, and Irwin, J.J., 2009, Leon Property: Molybdenum-copper-silver-gold mineralization in the decapitated root zone of the El Creston mineral deposit, north-central Sonora, Mexico, Geological Society of America Abstracts with Programs, Vol. 41, No. 7, p. 25.
- Polet, J.**, Thio, H.K., Kremer, M., Rapid Estimates of Rupture Extent for Large Earthquakes Using Aftershocks, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract S51B-1405, 2009.
- Thio, H.K., **Polet, J.**, Rapid Estimation of Tsunami Impact Following the Samoa Earthquake, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract U21E-2187, 2009.
- Polet, J.**, Thio, H.K. and P. Earle, Implementation of a Surface Wave Back-Propagation Method for Near Real-Time Determination of Earthquake Locations and Magnitudes, Seismological Research Letters Volume 80, No. 2, 318, 2009.
- Thio, H.K., P. Somerville and **J. Polet**, Probabilistic Tsunami Inundation Maps For California, Seismological Research Letters Volume 80, No. 2, 325, 2009.
- Wicks, Logan E. and **Nourse, Jonathan A.**, 2009, Failure analysis of a rockslide on Sunset Ridge fire access road, San Gabriel Mountains, California, Geological Society of America Abstracts with Programs, Vol. 41, No. 7, p. 674.

- **International**

- Polet, J.**, Thio, H.K. and P. Earle, Near Real Time Fully-Automatic Determination of Global Centroid Moment Tensors at the National Earthquake Information Center, abstract, 31st Course

of the International School of Geophysics International Workshop on Real Time Seismology:
Rapid Characterization of the Earthquake Source and of its Effects, Erice, Italy, 2009.

2. Service- 2009/2010 Academic Year

Service to the Department

David Berry:

Geological Sciences Department RTP Committee--chair

David Jessey:

Geology Club Advisor

Leader - Geology Club Field Trip to Death Valley

John Klasik:

Geological Sciences Department RTP Committee--member

Geological Sciences Department Curriculum Committee--member

Jeffrey Marshall:

Geological Sciences Department Curriculum Committee--member

Geological Sciences Department Program Review Committee--member

Geological Sciences Department RTP Committee—member

Geological Sciences Department--Visiting Speaker Series (Coordinator)

Jonathan Nourse:

Chair, Geological Sciences Department

Geological Sciences Department Program Review Committee--chair

Geological Sciences Department Curriculum Committee--chair

Geological Sciences Department Assessment Committee-- chair

Geological Sciences Department RTP Committee--member

Jascha Polet:

Geological Sciences Department Curriculum Committee--member

Geological Sciences Department Program Review Committee--member

Service to the College

David Berry:

College of Science RTP Committee—Member

Jeffrey Marshall:

NSF S-STEM Scholarship Program (Management Team Member & Student Advisor)

NASA LiftOff Science Education Program (Faculty Content Specialist)

Center for Educ & Equity in Math, Science, and Technology (Contributing Faculty Member)

Emergency Operations Committee Mini EOC #3 (Member)

Jonathan Nourse:

College of Science Budget Advisory committee—member

College of Science Selection Committee for the Distinguished Teaching Award—member

Service to the University

David Berry:

Geology Department representative for Preview Day

Jeffrey Marshall:

Academic Senate (Senator for College of Science/Geological Sciences Department)
Office of Research (University Coordinator for Undergraduate Research)
UR-BRONCO Undergraduate Research Working Group (Chair)
Teacher-Scholar Task Force (Member)
Academic Programs Committee (Member)
Faculty Advisory Board, Science, Technology, and Society (STS) Program (Member)
Faculty Advisory Board, International Studies Minor Program (Member)
Faculty Advisory Board, Cal Poly Pomona Center for GIS Research (Member)
CPP Undergraduate Research Poster Competition (Judge)

Jonathan Nourse:

University GE Assessment Committee—member
Geology Department representative for Countdown to Success
Geology Department representative for Showcase of Excellence
Geology Department representative for Bronco Fusion

Jascha Polet:

University Research Council--member
ADVANCE--associate
Academic Senate (Newly elected, June, 2010)

Service to the Profession (usually occurs in the context of professional associations)

Jeffrey Marshall:

Council on Undergraduate Research (CUR) (Geosciences Division Councilor)
Geological Society of America (Chair, Undergrad Research Session, GSA National Meeting)
Geological Society of America (Chair, Undergrad Res Session, GSA Cordilleran Section Meeting)
National Science Foundation (NSF) CCLI Program (Invited Panelist - July 12-14, 2009)
National Science Foundation (NSF) EarthScope & RUI Programs (Proposal Reviewer)
Society for Advancement of Chicanos and Native Americans in Science (Student Abstract Reviewer, SACNAS National Conference)

Jascha Polet:

Session Chair (American Geophysical Union Fall meeting 2009)

Service to the Greater Community

Jeffrey Marshall:

Whittier College Environmental Sciences Department, Whittier, California (Invited Speaker, October 14, 2009 - *“Riding the Waves of San Andreas: An epicentral view of the 1989 Loma Prieta Earthquake, Santa Cruz, California”*)

Leatherback Sea Turtle Trust, Goldring Marine Biology Field Station, Playa Grande, Guanacaste, Costa Rica (Invited Speaker, March 11, 2010 - *“The Trembling Serpent of Nicoya: Megathrust Earthquakes & the Rise and Fall of Coastal Topography in Costa Rica”*)

California State University San Marcos, Office of Research & Committee on Undergraduate Research (Program Reviewer & Site Visitor, April 6, 2010)

NASA LiftOff Science Education Program, LA County Department of Education & Cal Poly Pomona College of Science (Teacher Training Workshop Faculty)

Jonathan Nourse:

Public Outreach and Geologic Expertise related to the February 18, 2010 landslide along the I-10 to 57 Freeway connector:

February 19, 2010 Los Angeles Times: Quoted in article entitled “Landslide in San Dimas will keep freeway transition roads closed for at least a week”

February 19, 2010 San Gabriel Valley Tribune: Quoted in article entitled “Landslide closes transition between the 57 and 10 Freeways in San Dimas will keep freeway transition roads closed for at least a week”

February 23, 2010 Poly Post: Contributed drawings to and featured in article entitled “Dirt Alert: Landslide shows complex geology of the region”

March 1, 2010 Poly Centric: Contributed drawings to and featured in article entitled “The day the Earth gave way”

3. Scholarship with Students

Research involving students as researchers

John Klasik:

Technical guidance and supervision, X-ray Diffraction: Dr. Ravi, **students in Materials**

Engineering*, Composites Team, Corrosion Team

Member, Master’s Thesis Committee, **Mr. Mathew Willis***, Center for Regenerative Studies:

Commenced June 2010

Jeffrey Marshall:

Research Experience for Undergraduates (REU): “Seismogenesis of the Middle America Trench at the Nicoya Peninsula over multiple seismic cycles” funded by the National Science Foundation MARGINS Program – Undergraduate Researchers: A. Butcher, S. Morrish, B. Ritzinger, and K. Wellington (Geological Sciences Department). **Related Field expeditions in 2009-10 included the following:**

Península de Nicoya, Costa Rica, Central America: Field mapping, surveying, and sampling of uplifted marine and alluvial terraces & surveying of pre-earthquake tidal levels, Playa Carbón, Playa Grande, San Juanillo, Playa Garza, and Playa Coyote, with A. Butcher, S. Morrish, B. Ritzinger, and K. Wellington (Cal Poly Pomona undergraduate students) (March 7-25, 2010)

Península de Nicoya, Costa Rica, Central America: Field mapping, surveying, and sampling of uplifted marine and alluvial terraces, Puerto Carrillo, Río Ora Valley, Playa Negra, and Playa Avellanas, with S. Morrish and J. Utick (Cal Poly Pomona undergraduate students), and E. LaFromboise (CSU Northridge graduate student, former CPP undergraduate student) (July 26-August 6, 2009)

Central Pacific Coast, Costa Rica, Central America: Reconnaissance field mapping of Quaternary volcanic and alluvial strata exposed along new highway roadcuts, Orotina debris fan and Río Tárcoles Gorge, with T. Gardner (Trinity University faculty) and S. Morrish (Cal Poly Pomona undergraduate student) (July 22-25, 2009)

Jonathan Nourse:

Wicks*, Logan E. and Nourse, Jonathan A., 2010, Failure analysis of a rockslide on Sunset Ridge fire access road, San Gabriel Mountains, California, Senior Thesis, Cal Poly Pomona, 23 p, defended May 18.

Nourse, Jonathan A., 2010, Investigation of the February 18, 2010 Landslide Along the Interstate 10-57 Freeway Connector: Field work with Caltrans geologist Gustavo Ortega and student assistants **Kelly Kinder*** and **Brent Ritzinger***.

Nourse, Jonathan A., 2010, Gravity measurements and Total Station surveying in the Poverty Hills, Owens Valley, California, assisted by **Kelly Kinder***, **Josh Sargent***, **Kyle Wright*** and **Celia Pazos***, April 16-18

Nourse, Jonathan A., 2010, Late Quaternary evolution of the Sierra Madre frontal Fault system, south-central San Gabriel Mountains, Field work related to USGS National Earthquake Hazards Reduction Program grant, assisted by **Jeff Pepin*** and **Audra Hanks***, January-June.

Jascha Polet:

Oliver*, B., 2010, A Pilot Study to Determine Shear-Wave Velocities for Earthquake Site Response at Cal Poly Pomona Campus using Refraction Micro-Tremor, senior thesis, defended June 3.

Presentations involving students as co-presenters

David Jessey:

Bruns*, Jessica J. and Jessey, David R., 2010, Tectonic implications of basaltic volcanism in the Owens Valley, CA, Southern California Academy of Sciences Annual Meeting, Cal St. University-LA.

Bruns*, Jessica J. and Jessey, David R., 2010, Neogene basaltic volcanism in the Owens Valley, CA: Implications to tectonics of the ECSZ, Geological Society of America Cordilleran Sectional Meeting, Anaheim, CA.

Jeffrey Marshall:

LaFromboise*, E., Marshall, J., Simila, G., Protti, M., and Quintero, R., 2010, Neotectonics of the Nicoya Peninsula, Costa Rica: Geological Society of America, Abstracts with Programs, v. 42, no. 4, p. 100, Abstract 48-12.

Morrish*, S.C., **Butcher*, A.J.**, **Ritzinger*, B.T.**, **Wellington*, K.L.**, and Marshall, J.S., 2010, Tectonic geomorphology and earthquake hazards of the Nicoya Peninsula seismic gap, Costa Rica, Central America: Geological Society of America, Abstracts with Programs, v. 42, no. 4, p. 64, Abstract 18-25.

Morrish*, S.C., Marshall, J.S., **LaFromboise*, E.J.**, **Utick*, J.D.**, **Piestrzeniewicz*, P.**, and Protti, M., 2009, Coastal uplift and stream piracy as indicators of net seismic cycle deformation along the Costa Rica Pacific margin: Puerto Carrillo Headland and Río Ora Valley, Nicoya Peninsula: Geological Society of America, Abstracts with Programs, v. 41, no. 7, p. 674, Abstract 259-3.

Morrish*, S.C., **LaFromboise*, E.J.**, **Utick*, J.D.**, **Piestrzeniewicz*, P.**, and Marshall, J.S., 2009, Earthquakes, tectonic uplift, and stream piracy: Río Ora, Nicoya Peninsula, Costa Rica: 17th Southern California Conference on Undergraduate Research (SCCUR), Program with Abstracts.

LaFromboise*, E., Marshall, J., Simila, G., **Utick*, J.**, **Morrish*, S.**, Gardner, T., and Protti, M., 2009, Patterns of upper plate deformation along the Nicoya Peninsula seismic gap, Costa Rica: 2009 AAPG-SEG West Coast Student Research Exposition, California State University Northridge, Program with Abstracts.

Morrish*, S. and Marshall, J., 2009, Neotectonics and geomorphology of Quaternary marine and fluvial terraces at Puerto Carrillo and Río Ora, Nicoya Peninsula, Costa Rica: Cal Poly Pomona University, College of Science 4th Annual Undergraduate Research Symposium, 2009.

Morrish*, S. and Marshall, J., 2009, Neotectonics and geomorphology of Quaternary marine and fluvial terraces at Puerto Carrillo and Río Ora, Nicoya Peninsula, Costa Rica: Cal Poly Pomona University Student Research and Creative Activity Poster Exhibition, 2009.

Jonathan Nourse:

Wicks*, Logan E. and Nourse, Jonathan A., 2009, *Failure analysis of a rockslide on Sunset Ridge fire access road, San Gabriel Mountains, California*, Geological Society of America Abstracts with Programs, Vol. 41, No. 7, p. 674.

Bonnar*, Melissa, and Nourse, Jonathan A., 2010, *Structural analysis of folded Paleoproterozoic gneiss near West Fork-North Fork San Gabriel River confluence, California*, Geological Society of America Abstracts with Programs, Vol. 42, No. 4, p. 61.

Kieta*, Andrew, and Nourse, Jonathan A., 2010, *Impacts of the floods of 1938, 1969 and 2005 on the Old Mt. Baldy Road, San Gabriel Mountains, California*, Geological Society of America *Abstracts with Programs*, Vol. 42, No. 4, p. 60.

Jascha Polet:

Oliver*, B., 2010, A Pilot Study to Determine Shear-Wave Velocities for Earthquake Site Response at Cal Poly Pomona Campus using Refraction Micro-Tremor, senior thesis, defended June 3.

Polet, J., Thio, H.K., **Kremer*, M.**, Rapid Estimates of Rupture Extent for Large Earthquakes Using Aftershocks, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract S51B-1405, 2009.

4. Professional Awards and Honors

Cal Poly Pomona is now an official voting member of IRIS (Incorporate Research Institutions for Seismology). Membership benefits include: opportunities to participate in research grants and seismic experiments, access to seismic data sets, eligibility for student scholarships and internships, and access to employment networks for faculty and student job searches.

Assistant Professor Jascha Polet was an invited participant in a conference in Chile during May, 2010 for the 50th anniversary of the 1960 M = 9.5 Chile Earthquake. She also participated in a field trip to view the 1960 rupture sites and tsunami impacts. The field trip included first-hand assessment of damage associated with the recent February 27, 2010 M = 8.8 earthquake.

5. Awards and Honors Earned by your students (as a result of your work with them)

David Jessey:

Jessica Bruns 2010 recipient of the Henderson-Valles Scholarship Award--\$500

John Klasik:

Jason Jorgenson- 2010 recipient of the Margaret Van Buskirk Memorial Scholarship Award--\$750

Jeffrey Marshall:

Shawn Morrish - 2nd Place Winner – 2009 Cal Poly Pomona University Student Research and Creative Activity Poster Exhibition: Neotectonics and geomorphology of Quaternary marine and fluvial terraces at Puerto Carrillo and Río Ora, Nicoya Peninsula, Costa Rica

Shawn Morrish- 2010 recipient of the Henderson-Valles Scholarship Award--\$500

Jonathan Nourse:

Kelly Kinder- 2010 recipient of the Brunton Compass Award--\$450

Jeff Pepin- 2010 recipient of the Ernest Prete Junior Scholarship Award--\$1000

Jascha Polet:

Amber Butcher- 2010 recipient of the Grayce Teal Memorial Scholarship Award--\$2000